

## To Everything There is a Season: Reinvest in Minnesota (RIM) and Soil Conservation

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**Abstract** *The paper explores the severity of the problem of soil erosion and a variety of approaches to the problem. The typology of approaches includes doing nothing, individual party litigation, the state's invocation of public trust doctrine, and the state's exercise of its police power. The Reinvest in Minnesota Program reflects the state's exercise of its police power and addresses the problem of soil erosion by retiring marginal land from crop production through conservation easements. Programs such as Reinvest in Minnesota also reflect a certain ethic about the land.*

The social lesson of soil waste is that no man has the right to destroy soil even if he does own it in fee simple. The soil requires a duty of man which we have been slow to recognize. Henry Wallace, quoted in U.S. Dept. of Agriculture, *The Yearbook of Agriculture* (1938).

For everything there is a season, and a time for every matter under heaven: a time to be born, and a time to die; a time to plant, and a time to pluck up what is planted. . . . Ecclesiastes 3:1-2

### Introduction

Soil erosion is unavoidable because it is an inherently natural process, incapable of being entirely eliminated. However, soil erosion as a natural process and as an effect of poor agricultural and conservation practices are two separate phenomena, so distinct that some authors have described the conditions of current farming practices as ones which mine the soil.<sup>1</sup> Between 1977 and 1982, for example, soil erosion in the United States averaged 1.7 billion tons per year.<sup>2</sup> (The Mississippi River alone transports 300 million tons of soil into the Gulf of Mexico each year.)<sup>3</sup> It has been projected that between 1984 and 2000, there will be a 32 percent decline in the amount of topsoil per person.<sup>4</sup>

The problem of soil erosion is not endemic to United States agriculture in the 1980s. It has been an ongoing problem in the United States for more than two hundred years; with varying periods of intensity.<sup>5</sup> Furthermore, soil erosion has been a problem for past societies<sup>6</sup> and currently ranks as a global problem with far-reaching consequences.<sup>7</sup>

Recently, a number of states have taken measures to address the problem of soil erosion. One state, Minnesota for example, has sought to reduce soil erosion by retiring marginal land from crop production through the use of conservation easements. The program, known as the Reinvest in Minnesota (RIM) Reserve Program, was created through the promulgation of the Reinvest in Minnesota Resources Act of 1986.

The purpose of this paper is to examine and develop an understanding of RIM by

placing it within a context larger than the specifics of the act itself. In other words, the paper first examines the extent of soil erosion today as well as possible reasons for its widespread prevalence; second, a typology of approaches to the general problem of soil erosion is discussed; and finally, some general aspects of RIM are presented as a viable approach to the problem of soil erosion.<sup>8</sup>

### Why Soil Erosion?

There is much evidence to suggest that an "overproduction" mentality is behind the current erosional problem. According to Brown and Wolf, farmers throughout the world have abandoned ecologically stable agricultural practices for ones resulting in immediate short-term gains. In the Midwest, for example, farmers have adopted continuous row-cropping of corn or soybeans in place of crop rotations incorporating hay and/or grass.<sup>9</sup> The effects, however, are not immediately apparent. "Often the very practices that cause excessive erosion in the long run, such as the intensification of cropping patterns and the plowing of marginal land, lead to short-term production gains, creating an illusion of progress and a false sense of security."<sup>10</sup>

The "overproduction" mentality is a result of many interrelated variables. In some portions of the world, population pressure has given rise to intensification efforts and ultimately soil degradation.<sup>11</sup>

In the United States, the early 1970s witnessed an increased demand for farmers' foodstuffs; a period in which the federal government actively encouraged intensified agricultural production. (Then-Agriculture Secretary Earl Butz urged farmers to plant "fence row to fencerow."<sup>12</sup>) This call for increased production among the nation's farmers has been attributed to many factors. First and foremost, the demand for U.S. foodstuffs increased as a result of crop failures occurring in several regions of the world. This is best illustrated by the Soviet experience, ultimately resulting in an agreement with the United States to provide the USSR with \$1.1 billion worth of grain. A second factor contributing to increased production among U.S. farmers was the weakness of the dollar compared to other currencies in the world; resulting in relatively cheap grain for importation.<sup>13</sup> These two factors, together, led to dramatic increases in production as well as the abandonment of soil conservation practices in the United States.

"In the all-out push for production we began to lose some of the old soil conservation practices," said Norman Berg, the former Soil Conservation Service head who now represents the Soil Conservation Society of America in Washington, D.C. By the late 1970s, Neil Sampson said, "We found ourselves . . . with a very specialized, very intensive agriculture that had abandoned the age-old techniques for controlling soil damage, such as crop rotations. . . . Suddenly we were out there with huge new tractors farming land that was a great deal steeper or sandier or rougher just because we had the power and the mobility and the ability and technology to do it."<sup>14</sup>

Abandonment of conservation measures resulted in both increased rates of soil erosion and lowered productivity. Relying on research undertaken by Rosenberry et al., Brown and Wolf found a definite relationship between lowered productivity, increased soil erosion, and increased fertilizer needs.<sup>15</sup> Rosenberry et al. undertook the research for the Southern Iowa Conservation District and extrapolated from the base year of 1974 to

2020, assuming a constant rate of soil erosion over that time period. In 1974, the largest amount of southern Iowa cropland fell into the "moderately eroded" category, but according to the researchers, that category would shift to "severely eroded" by 2020.<sup>16</sup> The productivity per acre for the three main crops (corn, soybeans, and oats) would drop by almost one-half for each crop.<sup>17</sup> Accompanying this trend would be an increase in fertilizer needs. Corn would require a slight increase in pounds of phosphate and potash needed per acre and a dramatic increase in nitrogen, the latter jumping from 10 to 30 pounds per acre.<sup>18</sup> Brown and Wolf further note that fuel consumption, although varying according to soil type, would increase as well, since erosion causes the soil to become more compact and hence more difficult to till. On average, 38 percent more fuel would be required for tillage.<sup>19</sup>

Brown and Wolf also examined research undertaken by Lyles regarding the effect of topsoil loss on corn and wheat yields.<sup>20</sup> Although soil type had some effect, there was, nonetheless, a discernible trend as far as topsoil loss was concerned. The research regarding corn indicated that the loss of one inch of topsoil led to a reduction in yields of 3.0 to 6.1 bushels per acre; averaging 6 percent reduced yield per lost inch of topsoil. Wheat yields were reduced by 0.5 to 2.5 bushels per acre with the loss of one inch of topsoil; averaging 6 percent reduced yield per lost inch of topsoil.

As previously mentioned, the problem of soil erosion is not new. Soil erosion was also a problem of significant magnitude during the 1920s and 1930s. In another paper, I have discussed the United States economy and agricultural production during the 1920s and 1930s, pointing to the parallels to events occurring in the 1970s and 1980s. More specifically, I suggested that shortly after World War I the agricultural sector was marked by considerable expansion and a significant degree of land speculation.

At the same time, cash crop prices skyrocketed and farmers converted formerly marginal land into crop land. In addition, farmers were increasingly dependent upon substantial inputs of credit to support the expansion. This period of expansion continued until the early 1920s when both crop prices and land values plummeted. . . . The steady decline in both crop prices and land values resulted in an increased number of farm foreclosures.<sup>21</sup>

As in the 1920s and 1930s, the 1970s witnessed a period of intense overproduction and expansion followed, again, in the early 1980s by a period of dramatic decline in land values, shortage of credit, and ultimately farm foreclosures.<sup>22,23</sup> The 1920s and 1930s also witnessed, as a result of overproduction and incorporation of marginal land into cropland, extensive soil erosion.

In the early 1930s, the nation experienced a sustained drought. The damage done by cultivating the former grasslands in the prairie states was compounded by the lack of rain. Beginning in 1934 a series of devastating dust storms smothered crops, buried buildings, destroyed pasture land and forced many farmers to leave their land.

May 1934 brought some of the worst storms to the Great Plains, particularly in western Kansas, Texas, Oklahoma and eastern Colorado. . . . The dust lifted from the prairies, "darkened the sun over the nation's capital, sifted through the screens of tall office buildings in New York City and moved on for hundreds of miles over the Atlantic Ocean" wrote Bennett. . . . A presidential commission, directed in 1934 to assess the erosion

problem, reported that some 35 million acres of former farm land had been destroyed by gullying and that nearly 140 million acres had been stripped of much of its topsoil.<sup>24</sup>

As was the case in the 1920s and 1930s, there is much concern today for the current "crisis" of soil degradation, and attention is being drawn toward possible responses to improve the situation. A reasonable question is: why a concern with soil erosion at all? According to Brown and Wolf, soil erosion control measures simply make no sense economically in these times.<sup>25</sup> The authors do not, however, advocate continued poor practices. They argue, in fact, that continued "overproduction" will result in declining productivity over the long run and that the land will be abandoned in either the current or next generation.<sup>26</sup> A purely economic explanation for the present concern of many with soil erosion and control measures is insufficient on its face; a dollars-and-cents mentality will not encourage soil conservation, as indicated by Brown and Wolf. Nevertheless, there is a consensus that soil degradation is in existence and ameliorative efforts must be made. The literature is very expansive on this point. As an alternative explanation, I contend that a certain ethos (or ethic) regarding soil conservation exists on the part of at least some who are connected to the land. Furthermore, the example of Reinvest in Minnesota (RIM), in view of its passage through the legislature by means of a broad-based coalition, reflects this ethic.<sup>27</sup>

### A Typology of Approaches

At a theoretical level, there are four possible approaches when addressing the soil erosion problem. First, one may simply do nothing, thus allowing the problem to continue, under the view that it is either best left for future generations to "worry" about or that technology will provide a solution at some point in the future. This approach is untenable, and the fact that soil erosion has been identified as a current problem suggests that efforts be made at the present time to resolve it. Second, the soil erosion problem can be ameliorated through the mechanism of private party litigation—i.e., as the problem arises on an individual basis, the affected parties may resolve the matter in a court of law. The effect of single individuals pursuing their own self-interests with regard to their own land is the resolution of the cumulative problem of soil erosion. Third, the problem of soil erosion requires a larger scale approach. In other words, soil erosion cannot be resolved on an individual litigant basis for a variety of reasons, e.g., a party's lack of financial resources to pursue litigation, indifference to the problem, etc. Hence the State, while invoking the public trust doctrine, intervenes by treating soil as a natural resource and taking action which seeks to protect that existing trust resource.<sup>28</sup> Fourth, as an aspect of the State's exercise of its police power, the soil erosion problem is addressed by the appropriate government agencies carrying out their delegated duties.

As previously mentioned, the first approach (i.e., do nothing) is not viable since the problem of soil erosion has been identified and accepted as an area currently worthy of resolution. The second approach, private party litigation, reflects a common-law approach and has been in existence for some time. This approach basically applies to landlord-tenant relationships whereby the tenant fails to maintain the rental property. In other words, the tenant farmer fails to carry out good agricultural practices, thus "damaging" the rented property.<sup>29</sup> Two Iowa cases, *Moser v. Thorp Sales Corp.*,<sup>30</sup> and *Quade v.*

*Heiderscheit*,<sup>31</sup> point to the seriousness of such a claim and the willingness of courts to find liability. In *Moser*, the Iowa Supreme Court found liability on the basis of certain practices by the defendant, most notably, planting corn rows up and down hills and using a moldboard plow.<sup>32</sup> In *Quade*, the tenant was found liable for having plowed up and down as opposed to on the contour, resulting in sheet erosion and the development of ditches.<sup>33</sup> The approach of individual litigants going to court to resolve problems with soil erosion is fascinating but at the same time troublesome. It is fascinating from the standpoint that it represents a localized solution to a problem; the parties directly involved in the matter resolve the problem themselves. Unfortunately, the litigation, while resulting in imposition of liability, cannot return the soil already lost. Its effect, then, would be to put others on notice that poor farming practices by tenants may lead to lawsuits. In addition, while liability may be found, there is no guarantee that damages will be assessed, thus negating the effect of any liability imposed by the court. This is the case in *Moser*.<sup>34</sup> (The Iowa Supreme Court found liability but did not allow damages.) A further troublesome point is that this approach is best oriented toward tenants failing to practice good husbandry. It cannot successfully address the poor farming practices of an owner unless those practices in some way negatively affect a neighbor by means of nuisance—e.g., runoff of soil fills in a ditch or holding pond owned by an adjoining farmer.<sup>35</sup> Conceivably, if no negative effect occurs to others, the farmer can continue to degrade his or her land.

This problem suggests that the State may play a significant role in confronting the problem of soil erosion. More specifically, the State, by invoking public trust doctrine, may have some success in protecting natural resources in those situations not readily resolvable under the single-party litigation mode. The potential use of public trust doctrine for protection of soil is extensive, according to Yannacone.<sup>36</sup> Citing *Light v. United States*,<sup>37</sup> *United States v. Trinidad Coal Co.*,<sup>38</sup> and *Van Brocklin v. Tennessee*,<sup>39</sup> Yannacone claims that "the federal government holds all the public lands of the United States not as a monarch for private or prerogative purposes, but as a trustee for the benefit, use and enjoyment of the sovereign people of the United States."<sup>40</sup> In even more specific terms, he notes:

In the case of a national, natural resource treasure such as the limited supply of prime agricultural land in the United States, a court of equity can act to protect the public interest in the property even if it means limiting the rights of the nominal "owner." Equity can be called upon to protect the rights of the sovereign people of the United States in and to the benefit, use and enjoyment of property vested with the public interest long after it has come into private ownership. Prime agricultural land and the arable soils of this nation have become so important to the welfare of the people of this generation and those generations yet unborn that they are vested with sufficient public interest to impose the obligations of a trustee for the public benefit upon the nominal owners.<sup>41</sup> . . . The Constitution does not secure to any individual, much less to any corporation, the right to inflict injury upon the commonwealth or any substantial group of people. Landowners' rights to make use of their property in furtherance of self-interest must sometimes give way to overriding public need.<sup>42,43</sup>

As a counterpoint to this expanded conception of public trust is the view, as espoused

by Lazarus, that the doctrine is obsolete in the present-day world. His main argument is that public trust doctrine developed in an age when government agencies played no role in matters regarding the environment.

The public trust thesis loses vitality because it was based on a characterization of the relationship of the government to the natural environment that bears little resemblance to the role of government today. The public trust thesis was based on a view of government in which administrative agencies played little or no positive role in environmental protection or conservation. Those agencies instead mostly promoted developmental activities. The agencies conveyed fee simple title in public resources to private developers with few restrictions and engaged in environmentally destructive activities, building unnecessary highways and water projects, with no regard for the environmental consequences. Accordingly, the task for the law, and the public trust doctrine in particular, was to rein in the government. . . . The laissez faire prodevelopment government upon which the public trust doctrine is premised is an apparition of the past. When Sax wrote his public trust doctrine manuscript, for instance, essentially none of the major federal environmental laws or their state analogues were on the books. The EPA did not even exist then.<sup>44</sup>

Lazarus' central argument is that public trust doctrine is redundant and even too limiting in view of the State's exercise of its police power through government agencies. In fact, continued reliance on the doctrine could potentially threaten existing environmental protection laws and future progress in that area.<sup>45</sup>

Lazarus is not the sole figure suggesting that this is the age for direct government action. According to Brown and Wolf, government action is crucial for confronting the soil erosion problem. Thus, "in the absence of a governmental cost-sharing program similar to those used so effectively in the past, a farmer's only choice is whether to go out of business sooner or later."<sup>46</sup> Malone has stated, even more forcefully:

The heart rending famine in Ethiopia has created a public awareness of the catastrophic effects of a disaster brought about in large part by exhaustion of a country's topsoil. Soil conservation programs that depend on purely voluntary participation have proven to be ineffective in this country. More meaningful, forceful federal involvement in soil conservation is long overdue and now, hopefully, is forthcoming.<sup>47</sup>

According to this view, the State's involvement in soil conservation is merely an aspect of the exercise of its police power, protecting generally the public health and welfare.

Most importantly, expanding governmental police power is but one significant expression of the dramatic shift that occurred during this century concerning the appropriate role of government. This country was in large part founded by individuals with a narrow view of government and a firm belief that the sphere of governmental activity was distinct from and must not tread on the private realm of the individual. At the core of this private realm was the exercise of private property rights. The sanctity of these rights derived

from various philosophic and economic theories, ranging from those embracing natural law or a Kantian/Hegelian view of the relation of property to individual personality and dominion, to Benthamite utilitarianism and the laissez faire beliefs of Adam Smith. . . . The economic and wartime turmoil of the first half of the 1900s, spurred by rapid industrialization and social urbanization, severely eroded this traditional view of government and in the process laid the foundation for the developments in environmental law that occurred in the last decade and a half. Antitrust law and labor law, followed by a host of ambitious New Deal programs, challenged the notion of limited government and sought to infuse new economic theories and social values into the law. The sovereign authority to tax, spend, and regulate formed a powerful triad indispensable to this systematic process. Sovereign power to hold and dispose of its own property served only a relatively minor role in the process. The environmental protection and natural resource conservation laws of the last fifteen years broke dramatically from the traditional view of limited government and incorporated much of the New Deal vision of the rightful role of government. At the outset, the validity of the newer laws does not, as it did in the past, turn on their furthering narrow health and safety concerns; courts require only a rational relation to a goal of some 'conceivable public purpose,' including, for example, aesthetic values, conservation goals, or public welfare in general. Because environmental and natural resources laws do not always translate easily into health and safety goals, especially those of an immediate nature, this substantive expansion in the police power's scope has been extremely important, at least in facilitating the adoption of the laws.<sup>48</sup>

A good illustration of the State's exercise of its police powers is Iowa's promulgation of the Soil Conservation District's Law, establishing limits on soil loss for farms.<sup>49</sup> At the same time, a fund was established for financing a cost-share program implementing conservation practices. In 1979, the Iowa Supreme Court was asked to decide upon the constitutionality of the soil loss limits enforcement process in the Soil Conservation District's Law. The case, *Woodbury County Soil Conservation District v. Ortner*, involved multiple complaints by one farmer, Matt, against two others, Ortner and Schrank; Matt's property was being damaged by runoff of water and sediment from land farmed by Ortner and Schrank.<sup>50</sup> An administrative order was issued requiring the farmers to initiate efforts to reduce soil erosion to levels within allowed soil loss limits. Funds were concurrently set aside to pay 75 percent of the expense of compliance. The farmers refused to comply, were taken to court, and then challenged the constitutionality of the soil loss limits enforcement process. The court upheld the constitutionality of the soil loss limits enforcement process upon applying a balancing test; "whether the collection benefits (to the public) outweigh the specific restraints imposed (on the individual)."<sup>51</sup> The court concluded that the public interest outweighed the restraints on the defendant-farmers.

It should take no extended discussion to demonstrate that agriculture is important to the welfare and prosperity of this state. It has been judicially recognized as our leading industry. . . . The State has a vital interest in protecting its soil as the greatest of its natural resources, and it has a right to do so.<sup>52</sup>

Without doubt, Lazarus is correct in arguing that the State in exercising its police

powers has virtually usurped public trust doctrine as an effective means of confronting the problem of environmental degradation—for our purposes, soil erosion. (The same probably applies to the individual litigant mode as well.) However, what would be the result if those government agencies failed to carry out their duties during an era of appointment of agency heads who are decidedly against environmental protection? Such situations call not for rejection of public trust doctrine, etc., but rather for retaining as many options as possible, thus ensuring that conservation measures are followed.

A good example of an exercise of police power which also contains the seed of public trust is provided by the promulgation of the Minnesota Environmental Rights Law.<sup>53</sup> According to that Law, "Each person is entitled by right to the protection, preservation, and enhancement of air, water, land, and other natural resources located within the State and that each person has the responsibility to contribute to the protection, preservation, and enhancement thereof. . . . It is in the public interest to provide an adequate civil remedy to protect air, water, land and other natural resources located within the State from pollution, impairment, or destruction."<sup>54</sup> Natural resource is construed to "include, but not be limited to, all mineral, animal, botanical, air, water, land, timber, soil, quietude, recreational and historical resources. Scenic and esthetic resources shall also be considered natural resources when owned by any governmental unit or agency."<sup>55</sup>

For our purposes, however, the public trust concept cannot be taken too far since the "family farm," "family farm corporation," and "bona fide farmer corporation" are exempted from the effect of the Law.<sup>56</sup> This tends to support Lazarus' contention that public trust doctrine may not be entirely suitable for addressing the soil erosion problem.

### **Reinvest in Minnesota (RIM)**

The promulgation of RIM provides an example of the exercise of the State's police power.<sup>57</sup> As previously mentioned, the purpose of RIM is to retire marginal, highly erodible land from crop production while establishing a vegetative cover which will diminish the extent of soil erosion.<sup>58</sup> This is accomplished through conservation easements whereby the landowner is paid a certain amount of money while the land is pulled out of crop production. The easement may be permanent or for a period not less than twenty years.

The land must meet certain general requirements in order to be eligible. First, the land must be marginal or adjacent to marginal land as well as be beneficial to resource protection, critical for recording of the land description, inclusive of drained wetland, or, if containing a windbreak, helpful to resource protection.<sup>59</sup> Second, the land must have been owned by the landowner on 1 January 1985, or by the landowner (or parent or another blood relative of that owner) for a minimum of three years before applying to the program.<sup>60</sup> Third, the land must be at least five acres in size, excluding a windbreak.<sup>61</sup> Fourth, the land must not be involved in other government programs such as set-aside, enrollment, or diversion.<sup>62</sup> Fifth, the land must have been used for crop production for a minimum of two years from 1981 to 1985.<sup>63</sup> Finally, the land that may be enrolled cannot exceed 20 percent of the landowner's total agricultural land if he or she owns at least 200 acres. If the landowner owns more than 20 acres but less than 200 acres, he or she may place 20 acres plus 10 percent of the land balance in the program. If 20 acres or less, then all agricultural land owned may be placed in the conservation reserve.<sup>64</sup>

During the first year of its operation, 1986–1987, approximately 20,000 acres of land were taken out of production with officials expecting to remove yet another 20,000 acres

by the end of 1989.<sup>65</sup> According to Wayne Edgerton, RIM Reserve Coordinator, the program has been highly successful. During 1986 to 1987, the program set aside \$9.4 million, and applications, if all were accepted, would have led to a total expenditure of \$25.5 million. Edgerton attributes the farmers' acceptance of the program to both economic and noneconomic factors. The farmers recognize that the marginal land would best be utilized in a manner different from crop production—i.e., to develop wildlife and control soil erosion. However, there are economic incentives for raising crops on that marginal land. RIM provides farmers an opportunity to idle that land with the result that wildlife begins to flourish and soil erosion is controlled to a certain degree.<sup>66</sup>

RIM is also a success in view of the manner by which the program developed. The program resulted from the actions of a broad-based coalition of numerous groups, including conservationists, environmentalists, outdoor enthusiasts, resort owners, and farmers. What can the program offer these diverse groups who often are opposed to one another?

To conservationists, the program is a chance to slow pollution of Minnesota streams and lakes caused by cropland runoff. To environmentalists, it is a chance to regain for wildlife the environmental values of wetlands, fencerows, and woodlots lost to tillage during agriculture's boom years. To outdoor enthusiasts, RIM means better recreation. To resort owners and other tourist-oriented businesses, it means improved trade. To farmers, it is both a source of income at a time when many of them desperately need it and a source of support for conservation practices. To the Soil and Water Conservation Board, RIM is a major step toward realization of the goal of protecting the State's soil and water.<sup>67</sup>

The support continues in the form of the RIM Coalition, which provides ongoing support in order to keep the program moving ahead.<sup>68</sup>

## Conclusion

Reinvest in Minnesota (RIM) is a reflection of the State's exercise of its police power in an attempt to confront the problem of soil erosion. Soil erosion is a problem without boundaries, existing throughout the country and the world. An "overproduction" mentality has contributed significantly to the abandonment of previously used conservation practices and has led to extensive soil erosion. The problem is currently recognized, and efforts (e.g., RIM) are being made to rectify it. A variety of approaches are possible in dealing with the problem, but the state's exercise of its police power is the predominant mode used today.

The promulgation of RIM is of particular interest for two reasons, aside from the fact that it is an attempt to limit soil erosion. First, numerous groups, often opposed, successfully developed a coalition to encourage the passage of RIM and continue to provide support. Second, RIM is an expression of a land ethic held by at least some who are connected to the land. There can be no doubt that the ethic exists. The Minnesota Supreme Court recognized and gave credence to that ethic in a decision concerning the Minnesota Environmental Rights Act (*County of Freeborn by Tuveson v. Bryson*)<sup>69</sup> when it quoted Aldo Leopold's discussion of a land ethic. That discussion has no lesser significance for programs such as Reinvest in Minnesota.

"The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land. . . . In short, a land ethic changes the role of *Homo Sapiens* from conqueror of the land community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such." *A Sand County Almanac* (1949) p. 203. In the Environmental Rights Act, our State legislature has given this land ethic the force of law.<sup>70</sup>

The seeds have been planted.

## Acknowledgment

This article is dedicated to the memory of Robert B. Frey.

## Notes

1. Lester Brown and Edward C. Wolf, *Soil Erosion: Quiet Crisis in the World Economy* (Washington, D.C.: Worldwatch Institute, 1984).
2. *Ibid.*, 17.
3. *Ibid.*, 8.
4. *Ibid.*, 7.
5. "In the United States erosion has been a problem since colonial times. But only a few perceptive soil conservationists and scientific farmers recognized its potential seriousness and sought to control it. Among them were George Washington and Thomas Jefferson. Washington 'fought erosion with . . . zeal', wrote agricultural historian Edward Jerome Dies in *Titan of the Soil*. 'Each year the rains would wash topsoil down into his Muddy Hole farm, and each year he would haul it back to its proper place' . . . 'Jefferson', Dies said, 'noted that rainstorms washed both crops and soils down the hillsides of many farms. He attacked the problem and at length introduced horizontal or terraced plowing. Marked benefits resulted.' " Congressional Quarterly, Inc., *Farm Policy: The Politics of Soil, Surpluses, and Subsidies* (Washington, D.C.: Congressional Quarterly, Inc., 1984), 27. "Sheet, rill, gully, and streambank erosion were common. The erosion of the 1930s indicated that 3.6 billion metric tons of soil were washed off the fields, pastures, and forests of the United States annually, about three-fourths of it (2.7 billion mt) from cropland. Severe dust storms transported vast quantities of soil also. The storm of May 12, 1934, in the panhandle of Texas and Oklahoma, southeastern Colorado, and southwestern Kansas, carried dust 2500 km to New York City and Washington, D.C., and several hundred kilometers out to sea. It carried an estimated 185 million metric tons of soil." Frederick R. Troeh, J. Arthur Hobbs, and Roy L. Donahue, *Soil and Water Conservation for Productivity and Environmental Protection* (Englewood Cliffs, N.J.: Prentice-Hall, 1980), p. 45.
6. Some authors contend that a number of civilizations have fallen as a result of sediment eroding from uplands and clogging irrigation canals and ditches, resulting in declining agricultural production. Troeh, Hobbs, and Donahue, *Soil and Water Conservation*, 27. Mesopotamian civilization provides an excellent illustration. At the peak of its development, Mesopotamia had a population of 25 million people. By the 1930s, the same areas contained only 4 million people. "Water erosion on the sites of the upland villages began as soon as relatively large fields were opened on sloping land and farmed continuously. The soils are now badly gullied, and much of the original soil is gone. Food production declined even on ungullied sites, and a large population could no longer be fed. The irrigated fields of the southern lowland region did not lose soil by erosion, but still it was erosion that ruined the land. Demand for food forced cultivation ever higher up the steep slopes in the hilly and mountainous watershed to the north, sheep and goats overgrazed the hill pastures, and trees were felled indiscriminately for lumber

- and fuel. These practices denuded the watershed, causing severe erosion and erratic river flow. Large sediment loads were carried by the rivers in the sloping areas where flow was rapid, but the sediment was dropped where flow rate decreased on the level areas. Sediment was deposited in the river bed and, more importantly, in the irrigation canals and ditches. This sediment had to be removed for irrigation to continue. In time, human labor was insufficient to cope with removal, so sections of irrigated land were abandoned. No plant cover grew on the abandoned land because the area was arid. Without vegetative cover, wind eroded the fields, and drifting soil filled the remaining irrigation structures. Eventually the whole irrigated area was abandoned. The large population, much of it in the larger cities, could not be supported. Cities were abandoned, and the area became a desert of shifting sand." *Ibid.*, 26–27.
7. "Soil erosion is a physical process, but its consequences are economic. As soils are depleted through erosion, the productivity of laborers working the eroding land becomes more difficult to raise. In agrarian societies, deterioration of this resource base makes it more difficult to raise income per person. Further, as growth in food output slows, so does overall economic output. In largely rural, low-income societies with rapid population growth, this can translate into declining per capita income, as it already has for a dozen countries in Africa. Over the long term, world agricultural trade patterns and the international debt structure will be altered. As soils are depleted, countries are forced to import food to satisfy even minimal food needs. Scores of countries in the third world and eastern Europe find their international indebtedness further aggravated by their chronic dependence on imported food. And the loss of topsoil will force an energy-for-topsoil substitution as it increases the need for fertilizer and fuel for tillage. Other things being equal, land with less topsoil requires more energy to produce our food. Soil erosion will eventually lead to higher food prices, hunger, and quite possibly, persistent pockets of famine. Although the world economy has weathered a severalfold increase in the price of oil over the past decade, it is not well equipped to cope with even modest rises in the price of food. Although the immediate effects of soil erosion are economic, the ultimate effects are social. . . . When soils are depleted and crops are poorly nourished, people are often undernourished as well." Brown and Wolf, *Soil Erosion*, 41–42.
  8. The purpose of RIM is, in the words of the Minnesota legislature: "to keep certain marginal agricultural land out of crop production to protect soil and water quality and support fish and wildlife habitat. It is state policy to encourage the retirement of marginal, highly erodible land, particularly land adjacent to public waters and drainage systems, from crop production and to reestablish a cover of perennial vegetation." Minn. Stat. Ann. § 40.41 (1988).
  9. Brown and Wolf, *Soil Erosion*, 6.
  10. *Ibid.*, 6.
  11. "In mountainous regions such as those in Japan, China, Nepal, Indonesia, and the Andean countries, construction of terraces historically permitted farmers to cultivate steeply sloping land that would otherwise quickly lose its topsoil. Centuries of laborious effort are embodied in the elaborate systems of terraces in older settled countries. Now the growing competition for cropland in many of these regions is forcing farmers up the slopes at a pace that does not permit the disciplined construction of terraces of the sort their ancestors built, when population growth was negligible by comparison. Hastily constructed terraces on the upper slopes often begin to give way." *Ibid.*, 9. For a specific discussion of Indonesia, see Clifford Geertz, *Agricultural Involution: The Processes of Ecological Change in Indonesia* (Berkeley: University of California Press, 1963).
  12. Congressional Quarterly, Inc., *Farm Policy*.
  13. *Ibid.*, 29.
  14. *Ibid.*, 30.
  15. Brown and Wolf, *Soil Erosion*, 26–27.
  16. Categories: A. *Slightly eroded*: "no appreciable mixing of subsoil and topsoil in the plow layer." B. *Moderately eroded*: "some mixing of subsoil into the plow layer." C. *Severely eroded*: "topsoil is largely gone and the plow layer is predominantly subsoil." *Ibid.*, 26.
  17. *Ibid.*, 27.

18. *Ibid.*, 26.
19. *Ibid.*, 26.
20. *Ibid.*, 24-25.
21. R. Mark Frey, "Cyclical Developments in Agriculture: Another Round of Hardscrabble Existence," unpublished manuscript (April 1987), 2.
22. *Ibid.*, 10.
23. For an interesting exposition on the effects of such disturbances on the structure of the agricultural economy, see Philip M. Raup, "Structural Change in Agriculture in the United States," Staff paper P85-41 (December 1985). "The final analysis of prospects for structural change can only rest on a hope that any reduction in production capacity will place the conservation of land and water resources at the top of the list of policy goals." *Ibid.*, 33.
24. Congressional Quarterly, Inc., *Farm Policy*, 28.
25. "Recent U.S. studies have rather consistently concluded that soil erosion control is often not economical for farmers, based on strictly dollars-and-cents criteria. The study of southern Iowa soils referred to earlier showed that the short-term cost to farmers of reducing soil erosion to a level that would not reduce inherent productivity would be three times as great as the benefits." Brown and Wolf, *Soil Erosion*, 31.
26. *Ibid.*, 31.
27. More attention is given to this theme in the section devoted to a detailed discussion of RIM.
28. This, of course, is based on the assumption that soil has been legislatively defined as a trust resource.
29. "If a landlord-tenant relationship exists between the fee owner and the possessory owner the law or the lease itself imposes a duty upon the tenant to preserve the premises from deterioration and prevent damage to the leasehold. The lessee, in an agricultural lease, assumes an affirmative duty to farm the premises in a husband-like, or reasonable, manner." Danny Ray Smeins, "Moser v. Thorp Sales Corporation: The Protection of Farmland from Poor Farming Practices," *South Dakota Law Review* 27 (Summer 1982): 516.
30. 312 N.W.2d 881 (Iowa 1981).
31. 391 N.W.2d 261 (Iowa Ct. App. 1986).
32. 312 N.W.2d 881 (Iowa 1981).
33. 391 N.W.2d 261 (Iowa Ct. App. 1986).
34. 312 N.W.2d 881 (Iowa 1981).
35. "The invasion of one's premises by various pollutions may constitute a nuisance. Thus, invasion of one's premises by dirt may constitute a nuisance." 66 C.J.S. *Nuisances* § 23 (1950).
36. Victor John Yannacone, Jr., "Agricultural Lands, Fertile Soils, Popular Sovereignty, The Trust Doctrine, Environmental Impact Assessment and the Natural Law," *North Dakota Law Review* 51 (Spring 1975): 615.
37. 220 U.S. 523 (1911).
38. 137 U.S. 160 (1890).
39. 117 U.S. 151 (1886).
40. Yannacone, "Agricultural Lands", 625.
41. *Ibid.*, 621.
42. *Ibid.*, 630; referring to *Nebbia v. New York*, 291 U.S. 502 (1934).
43. Public trust doctrine has traditionally been applied solely to such areas as commerce, navigation, and fishing. Efforts have been made to expand the concept further with varying degrees of success. The Minnesota Environmental Rights Law, for example, incorporates at least some portion of the concept of public trust doctrine. Minn. Stat. Ann. § 116B.01 to 116B.13 (1987). Yannacone's article should be viewed, then, as a call for expanding the doctrine to a degree greater than currently employed. His article is an eloquent statement for expansion of the doctrine in order to address the very serious problem of soil degradation.
44. Richard J. Lazarus, "Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine," *Iowa Law Review* 71 (March 1986): 689-90.

45. "The doctrine's operation exacerbates a growing clash in liberal ideology, within natural resources law—between the need for individual autonomy and security, traditionally tied up in private property rights, and the demands of longer-term collective goals expressed in environmental protection and resource conservation laws." *Ibid.*, 692.
46. Brown and Wolf, *Soil Erosion*, 31.
47. Linda A. Malone, "A Historical Essay on the Conservation Provisions of the 1985 Farm Bill: Sodbusting, Swampbusting, and the Conservation Reserve," *University of Kansas Law Review* 34 (Spring 1986): 597.
48. Lazarus, "Changing Conceptions of Property", 666–68.
49. Iowa Code Ann. § 467A.47 (West 1975), cited in *Woodbury County Soil Conservation Dist. v. Ortner*, 279 N.W.2d 276 (Iowa 1979).
50. 279 N.W.2d 276 (Iowa 1979).
51. *Ibid.*, 278.
52. *Ibid.*, 278.
53. Minn. Stat. Ann. §§ 116B.01-116B.13 (1987).
54. Minn. Stat. Ann. § 116B.01 (1987).
55. Minn. Stat. Ann. § 116B.02, subd. 4 (1987).
56. Minn. Stat. Ann. § 116B.02, subd. 2, 6, 7, 8 (1987). See also, *County of Freeborn by Tuveson v. Bryson*, 243 N.W.2d 316, 320 (1976): "We now construe the family-farm exception to mean that the only conduct by a landowner which is immune from suit under the Act is farming or farm-related activity."
57. Conservation measures at the federal level, while extensive, are not discussed in this paper. For a discussion of federal programs, see the following: Kenneth E. Barker, "The New Federalism: Time for States to Pull the Plow in Soil Conservation," *South Dakota Law Review* 30 (Summer 1985); Sandra S. Batie, "Policies, Institutions and Incentives for Soil Conservation," *Agricultural Law Journal* 4 (Spring 1982); Robert T. Hiatt, "The SCS and Soil Erosion," *South Dakota Law Review* 31 (Spring 1986); Sandra Hunz, "'Sodbuster and Swampbuster Act' Affects Farmers' Ability to Get USDA Program Benefits," *Farmers Legal Action Report* 2 (March/April 1987); Malone, "A Historical Essay on the Conservation Provisions."
58. Minn. Stat. Ann. § 40.41 (1988).
59. Minn. Stat. Ann. § 40.43, subd. 2(1) (1988).
60. Minn. Stat. Ann. § 40.43, subd. 2(2) (1988).
61. Minn. Stat. Ann. § 40.43, subd. 2(3) (1988).
62. Minn. Stat. Ann. § 40.43, subd. 2(4) (1988).
63. Minn. Stat. Ann. § 40.43, subd. 2(5) (1988).
64. Minn. Stat. Ann. § 40.43 (1988).
65. Lee Egerstrom, "Programs to Pay Farmer to Idle Marginal Land," *St. Paul Pioneer Press Dispatch*, 28 September 1987, p. 3.
66. Telephone conversation with Wayne Edgerton, RIM Reserve Coordinator, Minnesota Department of Agriculture, 13 October 1987.
67. K. Korczak and M. Gran, "RIM: Reinvest in Minnesota," *Journal of Soil and Water Conservation* 41 (August/September 1986).
68. *Ibid.*, 316.
69. 243 N.W.2d 316 (1976).
70. *Ibid.*, 322.

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